

REMARKS

Summary Of The Office Action & Formalities

Claims 1-7 are all the claims pending in the application. By this Amendment, Applicants are amending claim 1, and adding new claims 8 and 9. No new matter is added.

Applicants thank the Examiner for acknowledging their claim to foreign priority and for confirming that the certified copy of the priority document was received.

The prior art rejections are summarized as follows:

1. Claims 1 and 5-7 are rejected under 35 U.S.C. § 102(b) as being anticipated by Livingston et al. (USP 5,426,264).

2. Claims 2-4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Livingston et al. (USP 5,426,264).

Applicants respectfully traverse.

Claim Rejections - 35 U.S.C. § 102

1. Claims 1 and 5-7 In View Of Livingston et al.

In rejecting claims 1 and 5-7 in view of Livingston et al., the grounds of rejection state that

Livingston et al. discloses a cable with at least one transmission element, which is surrounded by a sheath of insulation material, wherein the sheath comprises an inner layer (28) and an outer layer (30) which are firmly bonded together (by adhesive 31), and wherein the values for tensile strength and elongation at break of the inner layer (28) are significantly lower than those of the outer layer (30) (see C&M) document attached herewith).

Livingston et al. also discloses the tensile strength of the inner layer being about 20 N/mm², the elongation of the inner layer

being no more than approximately one third of that of the outer layer, and the elongation of the inner layer being about 150%.

Office Action at page 2. Applicants respectfully disagree.

The present invention is directed to a cable having a core surrounded by a sheath of insulation material from which the sheath can be stripped without the risk of damaging the core. See Specification at page 2, lines 6 to 8.

As recited in claim 1, this objective is achieved according to the invention with a sheath that comprises two layers of materials that are firmly bonded together when the outer layer is extruded around the inner layer. See Specification at page 4, lines 3 to 4. Accordingly, in the present invention an adhesive intermediate layer is not needed or desired.

Claim 1 also requires that the values for tensile strength and elongation at break of the inner layer are significantly lower than those of the outer layer.

In one preferred embodiment as recited in new claim 8, the two layers are made of the same base material. See also Specification paragraph bridging pages 3 to 4. That is achieved with the same base materials by mixing additives into the material of the inner layer (line 1 and lines 8 to 11 on page 4).

Both layers of the sheath in the completed cable form a uniform sheath that can be easily removed by cutting only the outer layer and then stripping the complete sheath by pulling in the longitudinal direction of the cable. See Specification, paragraph pages 5 6. Because of its unique construction, the inner layer will tear off during this action.

Livingston et al., on the other hand, discloses a cable for use in submersible well pumps in oil and gas well environments (abstract). According to this reference, the normally used

insulation materials for insulating the conductors are polypropylene and EPDM, which have disadvantages when used in cables for submersible well pumps.

Referring to Fig. 2 of Livingston et al., the reference further discloses conductors 24 with a conductor core 26 that is surrounded by an inner layer 28 of cross-linked polyethylene, and an outer barrier layer 30 formed from a completely different material - a fluoropolymer (column 2, lines 47 and 48). As explained by the reference, these layers are adhered to each other by an adhesive, because most fluoropolymers will not chemically bond to the cross-linked polyethylene (column 2, lines 59 and 60). The adhesive also prevents gases from forming gas pockets between the two layers (column 2, lines 64 to 66). Therefore, in the cable Livingston et al., the adhesive is a layer which is necessary for this cable.

Accordingly, contrary to the present invention, Livingston et al. does not describe a cable with an insulation sheath which has two layers bonded to each other without an additional adhesive. Moreover, the sheath of the Livingston et al. cable cannot be easily removed, and, indeed, should not. Rather, this cable must have special properties for its use with submersible well pumps.

Clearly, therefore, Livingston et al. does not teach or suggest all the limitations of claim 1 and dependent claims 2-7.

Regarding the Examiner's reference to the C&M paper, Applicants note that the values for tensile strength and elongation mentioned in this paper are specific values of the respective materials. The corresponding values of Polyethylene and TEFLON are not significantly different. The tensile strength value of Polyethylene is 1500-2200 and that of TEFLON is 1000-4300. The elongation value of Polyethylene is 180-600 and that of TEFLON is 250-330. These

values, therefore, are in the same scale for both materials, and the reference cannot be relied upon to teach or suggest the recited limitations directed to the differences in the tensile strength and elongation at break between the outer and inner layers. Clearly, there is no disclosure that teaches or suggests any particular combination of the materials in the C&M paper that would result in the claimed invention.

In view of at least the foregoing distinctions, Applicants kindly request the Examiner to reconsider and withdraw the rejection of claims 1 and 5-7.

Claim Rejections - 35 U.S.C. § 103

1. Claims 2-4 In View Of Livingston et al.

In rejecting claims 2-4 in view of Livingston et al., the grounds of rejection state that

Claims 2-4 additionally recite the thickness relationship between the inner and outer layers. It would have been obvious that depending on the specific use of the resulting cable, one skilled in the art would choose suitable thicknesses for the inner layer and the outer layer respectively since each layer has different characteristics. In addition, it has been held that discovering the optimum or workable range of an invention involves only routine skill in the art. In re Aller, 105 USPQ 233.

Office Action at page 3. Applicants respectfully disagree.

First, Applicants submit that claims 2-4 are allowable at least by reason of their respective dependencies.

Second, regarding optimization of ranges, “[a] particular parameter must first be recognized as a result-effective variable . . . before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation.” MPEP § 2144.05(b). The grounds of rejection, however, do not address this threshold inquiry at all, and the applied art clearly does not make this recognition.

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In view of at least the foregoing distinctions, Applicants kindly request the Examiner to reconsider and withdraw the rejection of claims 2-4.

New Claims

For additional claim coverage merited by the scope of the invention, Applicants are adding new claims 8 and 9. Claim 8 is believed to be allowable for the reasons noted above. Claim 9 recites that the inner layer and the outer layer are firmly bonded together by extruding the outer layer around the inner layer without a separate adhesive therebetween, and is believed to be allowable, since Livingston et al. clearly requires an adhesive 31 between the inner and outer layers.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,



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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

Claim 1. (Amended) A cable with at least one transmission element, which is surrounded by a sheath of insulation material, wherein the sheath (M) comprises an inner layer (3) and an outer layer (4), which are made of materials being firmly bonded together when the outer layer (4) is extruded around the inner layer (3) and wherein the values for tensile strength and elongation at break of the inner layer (3) are significantly lower than those of the outer layer (4).

Claims 8 and 9 are added as new claims.